

Report Information  
from Dialog DataStar



# Table of Contents

<b>DataStar Documents.....</b>	<b>1</b>
Biometric Encryption/sup TM--enrollment and verification procedures.....	1
Image based fingerprint verification.....	2
Fingerprint verification using correlation filters.....	3
Iris verification using correlation filters.....	4
Incremental updating of advanced correlation filters for biometric authentication systems.....	5
Using composite correlation filters for biometric verification.....	6
Correlation filters for recognition of live-scan fingerprints with elastic distortions.....	7
<b>Search Strategy.....</b>	<b>9</b>

## Biometric Encryption/sup TM/-enrollment and verification procedures.

### Dialog eLinks

Full text options **HSP TO Full Text Retrieval Options**

### Accession number & update

0006048880 20070101.

### Conference information

Optical Pattern Recognition IX, Orlando, FL, USA, 14–15 April 1998.

Sponsor(s): SPIE.

### Source

Proceedings of the SPIE – The International Society for Optical Engineering, {Proc–SPIE–Int–Soc–Opt–Eng–USA}, 1998, vol. 3386, p. 24–35, 4 refs, CODEN: PSISDG, ISSN: 0277–786X. Publisher: SPIE–Int. Soc. Opt. Eng. USA.

### Author(s)

Soutar–C, Roberge–D, Stoianov–A, Gilroy–R, Vijaya–Kumar–B–V–K.

### Author affiliation

Soutar, C., Roberge, D., Stoianov, A., Gilroy, R., Mytec Technol. Inc., Toronto, Ont., Canada.

### Abstract

**Biometric** Encryption/sup TM/ is an algorithm which has been developed to securely link and retrieve a digital key using the interaction of a **biometric** image, such as a fingerprint, with a secure block of data, known as a Bioscrypt/sup TM/. The key can be used, for example, as an encryption/decryption key. The Bioscrypt comprises a stored filter function, produced by a **correlation**-based image processing algorithm, as well as other information which is required to first retrieve, and then verify the validity of, the key. The process of securely linking a key with a **biometric** is known as enrollment, while the process of retrieving this key is known as verification. This paper presents details of the enrollment and verification procedures.

### Descriptors

CRYPTOGRAPHY; FINGERPRINT-IDENTIFICATION; IMAGE-CODING; OPTICAL-CORRELATION.

### Classification codes

B6120B Codes\*;  
B6140C Optical-information-image-and-video-signal-processing;  
C6130S Data-security\*;  
C1250 Pattern-recognition;  
C5260B Computer-vision-and-image-processing-techniques.

### Keywords

**Biometric**–Encryption–algorithm; digital–key; **biometric**–image–interaction; fingerprint; secure–block–of–data; Bioscrypt; encryption /decryption–key; stored–filter–function; **correlation**–based–image–processing–algorithm; enrollment–procedure; verification–procedure; link–algorithm.

### Treatment codes

P Practical.

### Language

English.

### Publication type

Conference–paper; Journal–paper.

### Availability

SICI: 0277–786X(1998)3386L:24:BEEV; 1–H.  
CCCC: 0277–786X/98/\$10.00.

### Publication year

1998.

### Publication date

19980000.

**Edition**

1998041.

**Copyright statement**

Copyright 1998 IEEE.

(c) 2008 The Institution of Engineering and Technology

**Image based fingerprint verification.****Accession number & update**

0007502628 20070101.

**Conference information**

2002 Student Conference on Research and Development. SCORed2002. Proceedings. Global Research and Development in Electrical and Electronics Engineering, Shah Alam, Malaysia, 16–17 July 2002.

**Source**

2002 Student Conference on Research and Development. SCORed2002. Proceedings. Globalizing Research and Development in Electrical and Electronics Engineering (Cat. No. 02EX598), 2002, p. 58–61, 7 refs, pp. xi+522, ISBN: 0–7803–7565–3. Publisher: IEEE, Piscataway, NJ, USA.

**Author(s)**

Seow–B–C, Yeoh–S–K, Lai–S–L, Abu–N–A.

**Author affiliation**

Seow, B.C., Yeoh, S.K., Lai, S.L., Abu, N.A., Fac. of Inf. Sci. & Technol., Multimedia Univ., Bukit Beruang, Malaysia.

**Abstract**

Human fingerprints have been considered as a unique signature certifying one's identity. Fingerprint verification is currently the most popular technique of **biometric** personal identification. As a **biometric** proof of identification, an alignment–based minutiae matching algorithm has been widely investigated, however, not many have considered fingerprint identification using image based verification. An image–based approach does not use minutiae features for fingerprint matching. This project investigates fingerprint–scanned image verification via an inverse fast Fourier transform after a thinning process. The technique may be applied directly to a gray–scale fingerprint image without pre–processing. This **correlation** coefficient approach is capable of finding correspondences between the input fingerprint image and the stored enrolled template with higher computational efficiency than the minutiae–based method. It has the ability of robust fingerprint verification subject to external conditions. In this paper, the design and implementation of a prototype of an automatic verification system is presented. The high matching rate achieved in this project suggests that an efficient small–scale fingerprint verification system is feasible.

**Descriptors**

FAST–FOURIER–TRANSFORMS; FINGERPRINT–IDENTIFICATION; IMAGE–MATCHING;  
IMAGE–THINNING.

**Classification codes**

C5260B Computer–vision–and–image–processing–techniques\*;  
C4188 Integral–transforms–in–numerical–analysis.

**Keywords**

image–based–fingerprint–verification; **biometric**; fingerprint–matching;  
inverse–fast–Fourier–transform; thinning; gray–scale–fingerprint–  
image; **correlation**–coefficient–approach; stored–enrolled–template;  
automatic–verification–system.

**Treatment codes**

P Practical.

**Language**

English.

**Publication type**

Conference–paper.

**Availability**

CCC: 0-7803-7565-3/02/\$17.00.

Other format availability: Also available on CD-ROM in PDF format.

**Digital object identifier**

10.1109/SCORED.2002.1033054.

**Publication year**

2002.

**Publication date**

20020000.

**Edition**

2003002.

**Copyright statement**

Copyright 2003 IEEE.

(c) 2008 The Institution of Engineering and Technology

---

## **Fingerprint verification using correlation filters.**

**Accession number & update**

0008178096 20070101.

**Conference information**

Audio- and Video-Based **Biometric** Person Authentication. 4th

International Conference, AVBPA 2003. Proceedings, Guildford, UK, 9-11

June 2003.

**Source**

Audio- and Video-Based **Biometric** Person Authentication. 4th International Conference, AVBPA 2003.

Proceedings (Lecture Notes in Computer Science Vol.2688), 2003, p. 886-94, 14 refs, pp. xvii+978,

ISBN: 3-540-40302-7. Publisher: Springer-Verlag, Berlin, Germany.

**Author(s)**

Venkataramani-K, Vijaya-Kumar-B-V-K. Editor(s): Kittler-J, Nixon-M-S.

**Author affiliation**

Venkataramani, K., Vijaya Kumar, B.V.K., Dept. of Electric. and Comput. Eng., Carnegie Mellon Univ.,

Pittsburgh, PA, USA.

**Abstract**

We investigate the use of **correlation** filters for fingerprint verification. **Correlation** filters have advantages such as their built-in shift invariance, closed form expressions, graceful degradation, and their ability to trade off discrimination for distortion tolerance. The NIST special database 24 is used here to evaluate fingerprint verification performance in the presence of distortions.

**Descriptors**

**CORRELATION-METHODS; FINGERPRINT-IDENTIFICATION; IMAGE-MATCHING; VISUAL-DATABASES.**

**Classification codes**

B6135E Image-recognition\*;

B6140 Signal-processing-and-detection;

C1250M Image-recognition\*;

C1260S Signal-processing-theory;

C5260B Computer-vision-and-image-processing-techniques;

C6160S Spatial-and-pictorial-databases.

**Keywords**

fingerprint-verification; **correlation**-filter; built-in-shift-invariance; closed-form-expression; graceful-degradation; distortion-tolerance; NIST-special-database-24; pattern-matching.

**Treatment codes**

P Practical;

T Theoretical-or-mathematical.

**Language**

English.

**Publication type**

Conference-paper.

**Publication year**

2003.

**Publication date**

20030000.

**Edition**

2004045.

**Copyright statement**

Copyright 2004 IEE.

((c) 2008 The Institution of Engineering and Technology)

---

**Iris verification using correlation filters.****Accession number & update**

0008178078 20070101.

**Conference information**

Audio- and Video-Based **Biometric** Person Authentication. 4th International Conference, AVBPA 2003. Proceedings, Guildford, UK, 9-11 June 2003.

**Source**

Audio- and Video-Based **Biometric** Person Authentication. 4th International Conference, AVBPA 2003. Proceedings (Lecture Notes in Computer Science Vol.2688), 2003, p. 697-705, 9 refs, pp. xvii+978, ISBN: 3-540-40302-7. Publisher: Springer-Verlag, Berlin, Germany.

**Author(s)**

Vijaya-Kumar-B-V-K, Chunyan-Xie, Thornton-J. Editor(s): Kittler-J, Nixon-M-S.

**Author affiliation**

Vijaya Kumar, B.V.K., Chunyan Xie, Thornton, J., Dept. of ECE, Carnegie Mellon Univ., Pittsburgh, PA, USA.

**Abstract**

Iris patterns are believed to be an important class of biometrics suitable for subject verification and identification applications. Earlier methods proposed for iris recognition were based on generating iris codes from features generated by applying Gabor wavelet processing to iris images. Another approach to image recognition is the use of **correlation** filters. **Correlation** filter methods differ from many image-based recognition approaches in that two-dimensional Fourier transforms of the images are used in this approach. In **correlation** filter methods, normal variations in an authentic iris image can be accommodated by designing a frequency-domain array (called a **correlation** filter) that captures the consistent part of iris images while deemphasizing the varying parts. **Correlation** filters also offer other benefits such as shift-invariance, graceful degradation and closed-form solutions. We discuss the basics of **correlation** filters and show how they can be used for iris verification.

**Descriptors**

CHARACTER-RECOGNITION; **CORRELATION**-METHODS; EYE; FILTERS; FOURIER-TRANSFORMS; FREQUENCY-DOMAIN-ANALYSIS; IMAGE-RECOGNITION.

**Classification codes**

B6135E Image-recognition\*;  
B0290X Integral-transforms-in-numerical-analysis;  
C1250B Character-recognition\*;  
C1250M Image-recognition;  
C4188 Integral-transforms-in-numerical-analysis.

**Keywords**

iris-verification; **correlation**-filter-method; biometrics;  
verification-application; identification-application; Gabor-wavelet-

processing; image-based-recognition-approach; two-dimensional-Fourier-transform; authentic-iris-image; frequency-domain-array.

**Treatment codes**

T Theoretical-or-mathematical.

**Language**

English.

**Publication type**

Conference-paper.

**Publication year**

2003.

**Publication date**

20030000.

**Edition**

2004045.

**Copyright statement**

Copyright 2004 IEE.

(c) 2008 The Institution of Engineering and Technology)

---

**Incremental updating of advanced correlation filters for biometric authentication systems.**

**Accession number & update**

0007937644 20070101.

**Conference information**

2003 IEEE International Conference on Multimedia and Expo, Baltimore, MD, USA, 6-9 July 2003.

Sponsor(s): IEEE Signal Process. Soc., Comput. Soc., Circuits & Syst. Soc., Commun. Soc.

**Source**

Proceedings 2003 International Conference on Multimedia and Expo (Cat. No.03TH8698), 2003, vol.3, p. III-229-32 vol.3, 10 refs, pp. 3 vol.(li +868+852+636), ISBN: 0-7803-7965-9. Publisher: IEEE, Piscataway, NJ, USA.

**Author(s)**

Savvides-M, Venkataramani-K, Kuman-B-V-K-V.

**Author affiliation**

Savvides, M., Venkataramani, K., Kuman, B.V.K.V., Electr. & Comput. Eng., Carnegie Mellon Univ., Pittsburgh, PA, USA.

**Abstract**

In this paper we show mathematical formulation of incrementally building advanced **correlation** filters used in authentication systems that are based on face and fingerprint images as biometrics for verification. This method is crucial for incorporating such algorithms on small devices with limited memory and computational resources. We also present results that show that these **correlation** filters perform well for face and fingerprint images. We used the PIE (pose, illumination and expression) database from CMY to test the verification performance using face images. Similarly, for fingerprint images we used the NIST special database 24 to evaluate verification performance.

**Descriptors**

**CORRELATION-METHODS; FACE-RECOGNITION; FINGERPRINT-IDENTIFICATION; VISUAL-DATABASES.**

**Classification codes**

B6135E Image-recognition\*;  
B6140B Filtering-methods-in-signal-processing;  
C5260B Computer-vision-and-image-processing-techniques\*;  
C6160S Spatial-and-pictorial-databases.

**Keywords**

**advanced**—correlation—filters; **biometric**—authentication; fingerprint—images; pose—database; face—images; expression—database; illumination—database.

**Treatment codes**  
P Practical.

**Language**  
English.

**Publication type**  
Conference—paper.

**Availability**  
CCCC: 7803—7663/03/\$17.00.

**Publication year**  
2003.

**Publication date**  
20030000.

**Edition**  
2004016.

**Copyright statement**  
Copyright 2004 IEE.

((c) 2008 The Institution of Engineering and Technology)

---

## Using composite correlation filters for biometric verification.

### Dialog eLinks

Full text options **USPTO Full Text Retrieval Options**

**Accession number & update**  
0007885605 20070101.

**Conference information**  
Optical Pattern Recognition XIV, Orlando, FL, USA, 24—25 April 2003.  
Sponsor(s): SPIE.

**Source**  
Proceedings of the SPIE – The International Society for Optical Engineering, {Proc—SPIE—Int—Soc—Opt—Eng—USA}, 2003, vol. 5106, p. 13—21, 13 refs, CODEN: PSISDG, ISSN: 0277—786X. Publisher: SPIE—Int. Soc. Opt. Eng. USA.

**Author(s)**  
Kumar—B—V—K—V, Savvides—M, Chunyan—Xie, Venkataramani—K, Thornton—J.

**Author affiliation**  
Kumar, B.V.K.V., Savvides, M., Chunyan Xie, Venkataramani, K., Thornton, J., Dept. of Electr. & Comput. Eng., Carnegie Mellon Univ., Pittsburgh, PA, USA.

**Abstract**  
**Biometric** verification refers to the process of matching an input **biometric** to stored **biometric** information. In particular, **biometric** verification refers to matching the live **biometric** input from an individual to the stored **biometric** template of that individual. Examples of biometrics include face images, fingerprint images, iris images, retinal scans, etc. Thus, image processing techniques prove useful in **biometric** recognition. In particular, composite **correlation** filters have proven to be effective. In this paper, we will discuss the application of composite **correlation** filters to **biometric** verification.

**Descriptors**  
BIOMETRICS—ACCESS—CONTROL; **CORRELATION**—METHODS; FACE—RECOGNITION; FILTERING—THEORY; FINGERPRINT—IDENTIFICATION; PATTERN—MATCHING.

**Classification codes**  
C5260B Computer—vision—and—image—processing—techniques\*;  
C1250M Image—recognition.

**Keywords**



**biometric**—verification; pattern—matching; face—images; fingerprint—images; iris—images; retinal—scans; **correlation**—filters; Iris.

**Treatment codes**

P Practical;  
T Theoretical—or—mathematical.

**Language**

English.

**Publication type**

Conference—paper; Journal—paper.

**Availability**

SICI: 0277-786X(2003)5106L:13:UCCF; 1-1.  
CCCC: 0277-786X/03/\$15.00.

**Digital object identifier**

10.1117/12.485918.

**Publication year**

2003.

**Publication date**

20030000.

**Edition**

2004010.

**Copyright statement**

Copyright 2004 IEE.

((c) 2008 The Institution of Engineering and Technology)

## Correlation filters for recognition of live-scan fingerprints with elastic distortions.

**Dialog eLinks**

Full text options [USPIO Full Text Retrieval Options](#)

**Accession number & update**

0007885604 20070101.

**Conference information**

Optical Pattern Recognition XIV, Orlando, FL, USA, 24-25 April 2003.  
Sponsor(s): SPIE.

**Source**

Proceedings of the SPIE – The International Society for Optical Engineering, {Proc-SPIE-Int-Soc-Opt-Eng-USA}, 2003, vol. 5106, p. 1-12, 15 refs, CODEN: PSISDG, ISSN: 0277-786X. Publisher: SPIE-Int. Soc. Opt. Eng. USA.

**Author(s)**

Watson-C-I, Casasent-D-P.

**Author affiliation**

Watson, C.I., Nat. Inst. of Stand. & Technol., Gaithersburg, MD, USA.

**Abstract**

A special NIST database of live-scan fingerprint with elastic distortion was prepared. It is used to evaluate the effect of elastic and other distortions on **correlation** filters. The need for normalized and fine vs. coarse rotationally-aligned data are addressed with performance gains for various cases noted. Procedures to test and evaluate fingerprint recognition algorithms for verification and identification are defined for the first time and initial results are presented.

**Descriptors**

**CORRELATION**—METHODS; FILTERING—THEORY; FINGERPRINT—IDENTIFICATION; VISUAL—DATABASES.

**Classification codes**

B6135E Image—recognition\*;  
B6140B Filtering—methods—in—signal—processing;  
C5260B Computer—vision—and—image—processing—techniques\*;

C1250M Image-recognition;  
C6160S Spatial-and-pictorial-databases.

**Keywords**

**biometric**-recognition; distortion-in-variant-filters; elastic-distortions; fingerprint-recognition; pattern-recognition;  
**correlation**-filters; NIST-database.

**Treatment codes**

P Practical;  
X Experimental.

**Language**

English.

**Publication type**

Conference-paper; Journal-paper.

**Availability**

SICI: 0277-786X(2003)5106L:1:CFRL; 1-G.  
CCCC: 0277-786X/03/\$15.00.

**Digital object identifier**

10.1117/12.501397.

**Publication year**

2003.

**Publication date**

20030000.

**Edition**

2004010.

**Copyright statement**

Copyright 2004 IEE.

((c) 2008 The Institution of Engineering and Technology)

## Search Strategy

No.	Database	Search term	Info added since	Results
1	INZZ	key WITH generat\$	unrestricted	1753
2	INZZ	1 AND (correlation OR relationship)	unrestricted	86
3	INZZ	biometric AND correlation	unrestricted	157

Saved: 18-Aug-2008 19:48:06 MEST